DOCUMENT RESUME

ED 230 283 PS 013 548

AUTHOR Schaefer, Earl S.; Hunter, Wanda M.
TITLE Mother-Infant Interaction and Maternal Psychosocial Predictors of Kindergarten Adaptation.
PUB DATE Apr 83
NOTE 19p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (50th, Detroit, MI, April 21-24, 1983).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Achievement; Demography; *Early Experience; Infants; Interaction; *Kindergarten Children; Longitudinal Studies; Low Income; *Mothers; *Parent Child Relationship; Predictor Variables; *Psychological Characteristics; Stimulation; *Student Adjustment; Student Evaluation

ABSTRACT

Findings of a longitudinal study indicated that maternal demographic and psychological characteristics were significantly correlated with maternal behavior at infants' fourth and twelfth months. Data were again collected on mother and child during the kindergarten year to determine the stability of maternal characteristics and to test the hypothesis that maternal behavior and maternal demographic and psychological characteristics measured during pregnancy and infancy, as well as during kindergarten, would predict the child's adaptation in kindergarten. Data collection included an interview with the mother during the third trimester of pregnancy, interview and observation during child care at 4 and 12 months, an interview with the mother during the kindergarten year, and teacher ratings of child adaptive behavior in kindergarten. In addition, several psychological measures were administered to mothers. The sample consisted of low-income mothers who were receiving prenatal services from public health clinics. Factor analysis of child care situations and ratings of mother/child interaction yielded two major dimensions of maternal behavior: interaction/stimulation and warmth vs. hostility. Both maternal behaviors of interaction/stimulation at 12 months and maternal demographic and psychological variables correlated with interaction/stimulation significantly predicted teacher ratings of child academic competence, particularly verbal intelligence and curiosity and creativity in kindergarten. The study suggests, however, that more reliable measures of maternal individual and parental modernity be developed, and that further research be conducted, particularly in the area of predictors of child social adjustment. (RH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ED230283

PS013548

Mother-Infant Interaction and Maternal Psychosocial Predictors of Kindergarten Adaptation

Earl S. Schaefer and Wanda M. Hunter

Department of Maternal and Child Health
University of North Carolina at Chapel Hill
Chapel Hill, North Carolina 27514

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Earl S. Schaefer
Wanda M. Hunter
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

SRCD

Paper presented at biennial meeting of the Society for Research in Child Development, Detroit, April 23, 1983.

The need for longitudinal research on mother-infant interaction, maternal psychosocial characteristics, and child school adaptation is supported by Cook and Campbell's (1979, p. 345) rationale for correlational research before experimental research. "Since so much in experimental research depends on the choice of the independent variable, preexperimental exploratory research helps to avoid the problem of premature experimentation which arises when treatments are implemented, whose operational stability is untested and whose theoretical or practical significance is underdetermined." Understanding of parent behavior and characteristics that are correlated with child adaptation in school may contribute to the design and evaluation of future parent-centered early interventions.

The original goal of this longitudinal project was to determine whether early and extended contact between mother and infant after delivery and/or ten home visits designed to promote maternal attachment during the first three months would influence maternal behavior with the infant at four and twelve months. The extended contact intervention had a significant impact on maternal acceptance at four months but not at twelve months (Siegel, Bauman, Schaefer, et al., 1980). However, maternal demographic and psychological characteristics were significantly correlated with maternal behavior at both four and twelve months. Data were again collected on mother and child during the kindergarten year to determine the stability of maternal characteristics and to test the hypothesis that maternal behavior and maternal demographic and psychological characteristics measured during pregnancy and infancy as well as kindergarten would predict the child's adaptation in kindergarten.

The longitudinal research included an interview with the mother during the third trimester of pregnancy, interview and observation during child care at four and twelve months, an interview with the mother during

the kindergarten year and teacher ratings of child adaptive behavior during Spring of the kindergarten year.

Sample: The sample consisted of low-income mothers who were receiving prenatal services from public health clinics. Only data on the first cohort of 110 children who entered kindergarten in 1981-82 have been analyzed. The second cohort of 120 children who entered kindergarten in 1982-83 will be used to replicate the findings from the first cohort. More detailed multivariate analyses will be done on the total longitudinal sample.

Data collection procedures: Data collection during pregnancy focused on measures that might predict maternal attachment. Data collection during the four month and twelve month interviews and observations focused upon measures and correlates of maternal attachment to the infant. The kindergarten interviews with the mother replicated and extended the analysis of maternal characteristics. Maternal behavior with the infant at four and at twelve months was recorded on a standard form immediately after observation of each child care situation of bathing, dressing and playing with the child. Observer ratings of maternal behavior based upon the total interview-and-observation period were collected after each session on a 75-item Attachment Inventory designed to describe maternal acceptance and involvement.

Demographic data on the mother included education, income, minority group membership, marital status and age of the mother. Maternal individual psychological measures included a short form of the Peabody Picture Vocabulary Test (Dunn, 1959), a brief locus of control (Rotter, 1966) scale collected at pregnancy, four months and twelve months and a revised short form collected at kindergarten, and an Overall Modernity test developed by Inkeles and Smith (1974). Ratings of maternal behavior with the interviewer were combined into measures of cooperativeness and of maternal

language skills. Measures of parent childrearing and educational beliefs and values included parental conforming versus self-directing values for children (Kohn, 1977) and traditional, authoritarian beliefs about child-rearing and education (Schaefer and Edgerton, 1981, in press). The kindergarten interview included scales designed to measure the ages at which the mother began teaching specific academic skills (adapted from Ninio, 1979), the number of educational experiences provided, the activities shared with the child, and the topics discussed with child.

Teachers rated child behavior in April of the kindergarten year on the Classroom Behavior Inventory that describes major dimensions of academic competence, extraversion versus introversion, and considerateness versus hostility (Schaefer, 1981; Schaefer and Edgerton, 1982).

Data analysis procedures: The complex observations and ratings of maternal behavior with the child were factor analyzed to isolate major dimensions of mother-infant interaction. Both the observations and ratings were integrated by two major dimensions of maternal behavior. An order of neighboring of clusters of maternal behavior items within a two dimensional organization was generated by converting factor loadings into polar coordinates.

The quantified data on mother-infant interaction were correlated with maternal demographic and psychological variables to determine correlates of maternal behavior with the infant. The maternal behavior, demographic, and psychological data were then correlated with teacher ratings of the child's adaptive behavior in kindergarten.

Results: Factor analysis of observations of child care situations and ratings of mother-child interaction yielded two major dimensions of maternal behavior--interaction/stimulation and warmth versus hostility. Clusters of maternal behavior items yielded by converting the factor loadings into

polar coordinates are reported in Table 1. The bipolarity of clusters of

TABLE 1 ABOUT HERE

interaction and low interaction and of responsiveness and low responsiveness and the interpretable order of neighboring of the integrated positive and negative sectors, reported in Table 2, supported the meaningfulness of

TABLE 2 ABOUT HERE

this organization of maternal behavior. Replication of this organization at four months and twelve months also supported the usefulness of the clusters for describing maternal behavior during infancy. Higher stability from four months to twelve months was found for ratings of interaction and stimulation than for ratings of punitiveness and irritability.

The maternal behavior clusters were significantly correlated with maternal psychological and demographic variables (Table 3) that might be

TABLE 3 ABOUT HERE

interpreted as reflecting maternal social and academic competence, with substantial correlations for interaction and stimulation and lower correlations for punitiveness and irritability. Interviewer ratings of maternal behavior as well as measures of maternal characteristics collected during pregnancy, at four and twelve months, and during kindergarten were significantly correlated with maternal behavior with the infant. Among the maternal characteristics most correlated with interaction and stimulation were maternal cooperativeness and language skills during the interview, locus of control, receptive vocabulary, overall modernity, self-directing as contrasted to conforming values for children, progressive democratic as contrasted to traditional authoritarian childrearing and educational beliefs, and parent education.

Since maternal behavior ratings at twelve months, as contrasted to four month ratings, showed higher correlations with child behavior in

kindergarten, only the correlations with child twelve month ratings are reported in Table 4. The highest correlations are of maternal behaviors of

TABLE 4 ABOUT HERE

achievement press, stimulation, interaction, and low interaction with teacher ratings of verbal intelligence and curiosity/creativity in kindergarten. The social adjustment behaviors of considerateness and extraversion are insignificantly correlated with the maternal behavior ratings. Correlations of maternal characteristics and behaviors during infancy and kindergarten with teacher ratings of child behavior in kindergarten are reported in Table 5. Again the highest correlations of the maternal demographic and

TABLE 5 ABOUT HERE

psychological variables are with teacher ratings of verbal intelligence and curiosity/creativity. Teacher ratings of child social behavior showed lower, typically insignificant, correlations with the maternal psychological and demographic characteristics.

Discussion: Although the Attachment Inventory had been developed to measure acceptance versus rejection and involvement versus detachment, the factor analysis revealed dimensions of punitive, irritable versus gentle, supportive behavior and of interaction/stimulation. The dimension of interaction/stimulation was more stable from four to twelve months and also more correlated with maternal psychological and demographic characteristics. This finding does not support a hypothesis that acceptance versus rejection or the quality of mother-child relationship is stable from early infancy despite evidence of stability from the first three years of life to adolescence (Schaefer and Bayley, 1960). Of course, observation during a single home visit may not reveal a stable pattern of behavior at four or twelve months; behavior at either time may be partially determined by the mother's physical or emotional state. However, the stability of interaction/stimulation and the correlations of interaction/stimulation with

other maternal characteristics reveal that the mother has stable patterns of educational behavior with the infant that are substantially correlated with the mother's psychosocial characteristics. This finding suggests that it would be possible to screen for mothers who might profit from parent-centered intervention prior to pregnancy or birth of the child with measures of social and academic competence including behavior with an interviewer, locus of control, verbal intelligence, overall modernity in beliefs and behaviors, and childrearing and educational beliefs and values. Such measures of individual modernity and parental modernity might also complement educational credentials in selecting day care and early education personnel who would provide a favorable educational environment for infants and young children.

Both maternal behaviors of interaction/stimulation at twelve months and maternal demographic and psychological variables that are correlated with interaction/stimulation significantly predict teacher ratings of child academic competence, particularly verbal intelligence and curiosity/creativity in kindergarten. Thus, both maternal behaviors and maternal psychosocial characteristics are indicators of a stable educational environment provided by the mother from infancy through childhood. Although individual modernity variables are significantly correlated with child competence, an algebraic summation of the normalized variables both during infancy and during kindergarten yields a higher correlation with child academic competence. This study suggests that higher predictions might be obtained by developing more reliable measures, by including additional measures of maternal individual and parental modernity, by repeating the measures, e.g., during pregnancy, at one year and three years, and at kindergarten entrance, and by collecting data on fathers. A single measure of moderate reliability and of moderate test-retest stability, e.g.,

observation of maternal behavior does not provide an adequate measure of the family psychosocial environment that influences child academic competence. However, this study shows that it is feasible to develop a set of correlated individual and parental modernity measures that yield good predictions of child academic competence. Additional measures, more reliable measures, and repeated measures of the child's academic competence would also yield more reliable and valid criteria of child school adaptation. The size of the correlations between maternal behavior and child competence would also be increased by greater heterogeneity of the sample.

The failure to find early predictors of the child's social adjustment in the classroom, particularly of considerateness and cooperativeness versus hostility and conduct problems, suggests the need to analyze other predictors of child social adjustment. Perhaps the substantial predictability of academic competence, as contrasted to social adjustment, might be due to stabilization and internalization of cognitive processes from family experiences of language and cognitive interaction (Vygotsky, 1978) as contrasted to the continuing influence of current interpersonal processes on social and emotional adjustment (Anderson, 1937). The current situation and relationships may have greater influence on social adjustment while the stable educational environment of the family may have greater cumulative influence on the academic competence of the child.

References

Anderson, H. H. Domination and integration in the social behavior of young children in an experimental play situation. Genetic Psychological Monographs 1937, 19, 341-408.

Cook, T. D. and Campbell, D. T. Quasi-experimentation: Design and analysis issues for field settings. Chicago: Rand McNally, 1979.

Dunn, L. M. Peabody Picture Vocabulary Test. Circle Pines, Mn.: American Guidance Service, 1959.

Inkeles, A. and Smith, D. H. Becoming modern: Individual change in six developing countries. Cambridge, Mass.: Harvard University Press, 1974.

Kohn, M. L. Class and conformity: A study in values. (Second Edition) Chicago: University of Chicago Press, 1977.

Ninio, A. The naive theory of the infant and other maternal attitudes in two subgroups in Israel. Child Development, 1979, 50, 976-980.

Rotter, J. B. Generalized expectancies for internal versus external control or reinforcement. Psychological Monographs, 1966, 80 (1, Whole No. 609).

Schaefer, E. S. Development of adaptive behavior: Conceptual models and family correlates. In M. Begab, H. Garber, and H. C. Haywood (Eds.), Psychosocial influences in retarded performance, Vol. 1: Issues and theories in development. Baltimore: University Park Press, 1981.

Schaefer, E. S. and Bayley, N. Consistency of maternal behavior from infancy to preadolescence. Journal of Abnormal and Social Psychology 1960, 61, 1-6.

Schaefer, E. S. and Edgerton, M. Parental modernity in childrearing and educational attitudes and beliefs. Paper presented at Society for Research in Child Development Meeting, Boston, April 1981.

Schaefer, E. S. and Edgerton, M. Circumplex and spherical models for child school adjustment and competence. Paper presented at American Psychological Association Annual Meeting, Washington, D. C., August 1982.

Schaefer, E. S. and Edgerton, M. Parent and child correlates of parental modernity. In I. E. Sigel (Ed.), Parental belief systems. New York: Erlbaum, in press.

Siegel, E., Bauman, K. E., Schaefer, E. S., Saunders, M. M., and Ingram, D. D. Hospital and home support during infancy: Impact on maternal attachment, child abuse, neglect, and health care utilization. Pediatrics, 1980, 66, 183-190.

Vygotsky, L. S. Mind and society: The development of higher psychological processes. Edited by M. Cole, V. John Steiner, S. Scribner, and E. Souberman. Cambridge: Harvard University Press, 1978.

TABLE 1

A Circumplex Model for Maternal Behavior During Infancy

Positive Sector

Clusters and Item Nos.	Items	Vector Length	Angle
Responsiveness			
30	Mother quickly responds to baby's distress.	.74	83°
46	Mother handles baby gently and considerately.	.75	85°
75	Mother eager to pat or pick up crying baby to quiet or comfort him/her.	.72	85°
17	Mother touches or strokes baby gently.	.68	87°
36	Mother wishes to meet baby's every need.	.72	87°
25	Mother immediately responds to any need of the baby for attention, care or sympathy.	.73	87°
31	Mother handles baby skillfully.	.70	89°
73	Mother tender and protective toward baby.	.78	89°
14	Mother holds baby by choice.	.65	89°
8	Mother holds baby in her arms to comfort or console him/her.	.68	90°
Pleasure in Mothering			
66	Mother enjoys physical contact with baby.	.74	92°
19	Mother happy with tasks of caring for baby.	.80	93°
44	Mother soothes baby by holding and cuddling.	.68	93°
65	Mother derives much pleasure from mothering.	.83	96°
57	Mother enjoys watching baby.	.80	98°
41	Mother has happy expression on her face while caring for baby.	.76	102°
Interaction			
50	Mother speaks in soothing tones to baby.	.75	105°
38	Mother interested in baby's behavior.	.70	107°
70	Mother enjoys playful interaction with baby.	.82	112°
26	Mother loving and playful in care of baby.	.83	112°
58	Mother plays with baby in ways that please him/her.	.81	114°
12	Mother often smiles at baby.	.76	115°
5	Mother hugs or kisses baby.	.66	117°
Stimulation			
62	Mother admires baby's abilities to learn or do things.	.74	119°
32	Mother plays little games with baby.	.76	121°
47	Mother sings, hums, or coos to baby.	.74	122°
1	Mother praises baby's new responses or responses to new events.	.80	125°
68	Mother stimulates baby frequently, e.g. lots of talking, handling, and playing.	.83	125°
Achievement Press			
21	Mother stimulates baby to get him/her to perform.	.69	131°
72	Mother reports how smart or how good baby is.	.73	133°
71	Mother points out things baby can do.	.76	135°

TABLE 1
(continued)

Negative Sector

Clusters and Item Nos.		Items	Vector Length	Angle
Punitiveness				
	39	Mother spanks or punishes baby physically for any reason.	.68	222°
	16	Mother shouts or yells at baby.	.73	231°
	18	Mother punishes baby when displeased.	.70	232°
Irritability				
	64	Mother's voice harsh, rough, unsympathetic with baby.	.75	235°
	60	Mother talks to baby at times with irritable voice.	.74	238°
	74	Mother seems irritated with some of baby's behavior.	.73	240°
	20	Mother thinks her baby has a lot of faults.	.66	241°
	29	Mother seems irritable when baby fusses, cries, doesn't drink his/her milk, etc.	.72	242°
	33	Mother seems irritated when caring for baby.	.71	244°
Insensitivity				
	63	Mother lets baby alone even when baby is in distress.	.64	246°
	69	Mother pays no attention to baby's discomfort or unhappiness.	.70	247°
	52	Mother flips baby about without any concern for how baby feels.	.73	248°
	59	Mother abrupt or rough in handling the baby.	.66	250°
Unresponsivness				
	37	Mother does things her way to get the job done and fails to notice the baby's needs and experiences.	.75	257°
	45	Mother would like to have others assume most of the responsibility for care of the baby.	.66	259°
	49	Mother treats baby more like an object than as a person.	.78	260°
	34	Mother doesn't enjoy her role as a mother.	.74	262°
	4	Mother looks at baby without a trace of tenderness.	.68	263°
	61	Mother doesn't handle baby any more than is necessary to care for him immediate physical needs.	.73	265°
	54	Mother seems to be unresponsive at times.	.77	266°
	55	Mother seldom paid any attention to baby's responses during the session.	.68	266°
	22	Mother showed no signs of spontaneous warmth toward baby.	.76	266°
	28	Mother seemed not to notice what baby did during session.	.62	267°
	27	Mother does not cuddle baby except in response to crying.	.76	270°
Low Interaction				
	23	Mother has little eye-to-eye contact with baby.	.72	290°
	9	Mother plays with baby very little.	.76	294°
	42	Mother has little "en face" contact with baby.	.68	295°
	53	Mother does not talk, sing, or otherwise vocalize to baby.	.76	297°

TABLE 2

INTERCORRELATIONS OF MATERNAL BEHAVIOR CLUSTERS

AT

FOUR MONTHS (LOWER LEFT DIAGONAL) AND AT TWELVE MONTHS (UPPER RIGHT DIAGONAL)

CORRELATIONS BETWEEN FOUR AND TWELVE MONTHS IN PARENTHESES

	Achievement Press	Stimulation	Interaction	Low Interaction	Pleasure in Parenting	Unresponsiveness	Responsiveness	Insensitivity	Irritability	Punitiveness
Achievement Press	(42)[1]	87	81	-72	72	-66	70	-51	-49	-27
Stimulation	87	(53)	90	-85	81	-77	79	-63	-55	-35
Interaction	81	92	(48)	-84	90	-84	86	-70	-64	-50
Low Interest	-75	-85	-85	(41)	-76	83	-71	63	56	35
Pleasure	71	82	89	-82	(33)	-88	93	-75	-69	-53
Unresponsive	-64	-76	-81	82	-89	(36)	-87	79	75	57
Responsive	62	73	78	-71	88	-85	(27)	-80	-72	-60
Insensitivity	-43	-51	-57	63	-67	78	-76	(30)	76	68
Irritability	-33	-41	-44	46	-57	66	-62	67	(28)	79
Punitiveness	-30	-36	-38	41	-46	54	-54	57	76	(33)

[1] Decimal points omitted. All correlations significant at .05 level.

TABLE 3

CORRELATIONS OF MATERNAL BEHAVIOR RATINGS AT
ONE YEAR WITH
MATERNAL CHARACTERISTICS

Maternal Characteristics	Maternal Behavior Ratings at One Year			
Mother's Behavior with Interviewer	Stimulation	Interaction	Irrit.	Punit.
Cooperativeness-Pregnancy	.45[1]	.43	-14	-11
Uncooperativeness-Kindergarten	.40	.44	-17	-22
Language Skills-Kindergarten	.37	.40	-19	-24
Psychological Characteristics				
Receptive Language (PPVT)-Pregnancy	.41	.38	-26	-21
External Locus of Control-Infancy	-44	-41	25	16
External Locus of Control-Kindergarten	-26	-25	12	.06
Overall Modernity-Kindergarten	.42	.34	-25	-20
Childrearing Values and Beliefs				
Conforming vs. Self-Directing Values-Infancy	-34	-34	22	17
Conforming vs. Self-Directing Values-Kgtn.	-40	-42	33	29
Authoritarian Childrearing Beliefs-Kgtn.	-34	-35	29	24
Educational Behaviors				
Age of Teaching Academic Skills-Kindergarten	-21	-12	-04	08
Providing Educational Experiences-Kgtn.	36	31	-12	-16
Talking with Child-Kindergarten	22	15	00	06
Sharing Activities with Child-Kindergarten	23	18	-02	03
National Education	31	26	-17	-19

[1] Decimal points omitted. Underlined correlations significant at .05 level.

TABLE 4

CORRELATIONS OF MATERNAL BEHAVIOR AT TWELVE MONTHS
WITH
TEACHER RATINGS OF CHILD BEHAVIOR IN KINDERGARTEN

	Child Behavior in Kindergarten					
Maternal Ratings at Twelve Months	Considerateness	Task Orientation	Independence	Verbal Intelligence	Curiosity/ Creativity	Extra-version
Achievement Press	-03[1]	11	23[2]	35	34	07
Stimulation	04	11	25	38	37	10
Interaction	04	13	24	34	32	09
Low Interaction	-13	-13	-22	-32	-35	-11
Pleasure in Parenting	08	09	20	24	23	06
Low Responsiveness	-05	-06	-15	-20	-21	-06
Responsiveness	02	01	-12	18	15	01
Insensitivity	00	-02	-11	-12	-11	01
Irritability	-07	-02	-03	-03	-02	06
Punitiveness	-06	02	01	-04	01	07
Observations of Child Care Situations at Twelve Months:						
Interaction Factor	22	20	32	32	28	12

[1] Decimal points omitted.

[2] Underlined correlations significant at .05 level.

TABLE 5

CORRELATIONS OF MATERNAL CHARACTERISTICS
WITH
CHILD BEHAVIOR IN KINDERGARTEN

Maternal Characteristics	Child Behavior in Kindergarten					
	Considerateness	Task Orientation	Independence	Verbal Intelligence	Curiosity/ Creativity	Extra-version
Mother's Behavior with Interviewer						
Cooperativeness-Pregnancy	17[1]	25[2]	33	37	37	33
Cooperativeness-Kindergarten	18	27	41	39	40	19
Language Skills-Kindergarten	02	07	22	36	35	24
Psychological Characteristics:						
Receptive Language-Pregnancy	-04	-06	09	26	20	14
External Locus of Control-Infancy	04	-09	-18	-33	-30	-18
External Locus of Control-Ktgn.	00	-01	-12	-23	-28	16
Overall Modernity-Kindergarten	-01	15	21	27	33	26
Childrearing Values and Beliefs:						
Conforming Values- Infancy	02	-03	-22	-30	-30	-16
Conforming Values- Kindergarten	-04	-07	-20	-34	-35	-19
Authoritarian Beliefs-Ktgn.	-02	-03	-17	-28	-29	-11
Educational Behaviors-Kindergarten						
Age of Teaching Skills	19	-02	-20	-33	-31	-16
Providing Educational Experiences	-15	-03	13	30	27	14
Talking with Child	12	19	31	22	22	15
Sharing Activities	01	17	30	21	13	00
Maternal Education	03	10	14	34	31	13

[1] Decimal points omitted.

[2] Underlined correlations significant at .05 level.